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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,979

07/02/2007

Kaneo Chiba

B-6120PCT 623710-0

9332

7590

06/08/2010

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EXAMINER

CHOI, FRANK I

ART UNIT

PAPER NUMBER

1616

MAIL DATE

DELIVERY MODE

06/08/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,979	Applicant(s) CHIBA ET AL.	
	Examiner FRANK I. CHOI	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The amendment filed on 3/4/2010 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The amendment incorporates the disclosure of PCT/JP2005/03809 and JP 2004-062160 by reference. The cross-reference to related applications and incorporating the same by reference was not filed at the time the application was filed. When a benefit claim is submitted after the filing of an application, the reference to the prior application cannot include an incorporation by reference statement of the prior application unless an incorporation by reference statement of the prior application was presented upon filing of the application. See *Dart Indus. v. Banner*, 636 F.2d 684, 207 USPQ 273 (C.A.D.C. 1980).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 03/022736 in view of JP 2002-307053, JP 60-122337, McGrath et al. (US 6,649,145), Senkiw (US 2004/0118701), Bunkin et al. and Aquarius.

The invention is directed to oxygen nanobubble water comprising oxygen nanobubbles having a bubble diameter of 200 nm or less being surrounded by an inorganic shell comprised predominantly of electrolytic ions positioned to inhibit said oxygen from dissolving into the aqueous solution and a method of producing the by applying physical irritation to oxygen-containing microbubbles to reduce the size of the same.

WO 03/0227356 discloses that the merit of water discharge in the product of an oxygenated water is that production and dissolution of the ozone take place at the same time (page 4, lines 10-13). It is disclosed that about 2 liters of an ozonated water with 6 mg/l concentration was produced (page 4, lines 15,16). It is disclosed that fine bubble can be produced by a bubble generator (page 9, lines 13-30). An apparatus is disclosed where the water discharge system has two electrodes insulated with at least one dielectric and an insulator body surrounding the metal electrodes, the water discharge system producing through a dielectric barrier discharge the ozone and ozonated water (Claim 1).

JP 2002-307053 disclose the use of ultrasonic vibrations to effect the ozone bubbles (claims, paragraph 0026).

JP 60-122337 disclose the use of a rotation shaft with a screw blade which has thin holes to effect the ozone bubbles (claims, page 3, line 8 to page 4, line 16).

McGrath et al. discloses oxygen nanobubbles having a size of 20-30 nm which are prepared by flowing liquids over hydrophobic surfaces (Column 7, lines 43-55). It is disclosed

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that nanobubbles allow higher concentrations of oxygen to be achieved in the aqueous solution and that the solutions can be prepared with physiological saline (Column 7, lines 44-65).

Senkiw disclose the production of oxygen nanobubbles by electrolysis (Abstract, Paragraph 0012)

Bunkin et al. disclose that submicrobubbles can be stabilized by ions and that these “bubstons” formed in water have a radii of approximately 1-10 nm (Page 208).

Aquarius discloses that a 1000 ppm solution of sodium chloride has an electrical conductivity of 1990 $\mu\text{S}/\text{cm}$ (Page 1).

WO 03/0227356 disclose the production of ozone bubbles and ozonated water where the a dielectric barrier is used to effect the ozone bubbles. The difference between WO 03/0227356 and the claimed invention is that WO 03/0227356 does not expressly disclose the use of ultrasonic vibrations or circulating screwblades which have holes to effect the bubbles or oxygen bubbles that are 200 nm or less, where the water has a salinity concentration in the range of 0.01% to 3.5%. where the nanobubbles have an inorganic shell of electrolytes, where the electric conductivity of the aqueous solution reaches at least 300 $\mu\text{S}/\text{cm}$. However, the prior art amply suggests the same as JP 2002-307053 disclose the use of ultrasonic vibrations to effect the ozone bubbles, JP 60-122337 disclose the use of a rotation shaft with a screw blade which has thin holes to effect the ozone bubbles and McGrahth discloses that oxygen bubbles having a size of 20-30 nm can be prepared, physiological saline used as the carrier, Senkiw discloses the production of oxygen nanobubbles by electrolysis, Bunmkin et al. disclose that submicrobubbles can be stabilized by ions and that these “bubstons” formed in water have a radii of approximately 1-10 nm and Aquarius discloses that a 1000 ppm solution of sodium chloride has an electrical

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conductivity of 1990 $\mu\text{S}/\text{cm}$. As such, one of ordinary skill in the art would have been motivated to modify the prior art as above with the expectation by use of the same that similar to ozone bubbles that oxygen bubbles would exhibit increased dissolution into the water and that the aqueous solution would have a salinity falling within the claimed range of 0.01% to 3.5% via the use of physiological saline, that the presence of the ions will stabilize the oxygen nanobubbles and that physiological saline will have a electrical conductivity which is greater than 300 $\mu\text{S}/\text{cm}$.

The Examiner has duly considered the Applicant's arguments but deems them moot in light of the new grounds of rejection herein.

Therefore, the claimed invention, as a whole, would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, because every element of the invention has been collectively taught by the combined teachings of the references.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

A facsimile center has been established in Technology Center 1600. The hours of operation are Monday through Friday, 8:45 AM to 4:45 PM. The telecopier number for accessing the facsimile machine is 571-273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Choi whose telephone number is (571)272-0610. The Examiner maintains a flexible schedule, however, the Examiner may generally be reached Monday, Tuesday, Wednesday and Thursday, 6:00 am – 4:30 pm (EST).

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If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Johann R. Richter, can be reached at (571)272-0646. Additionally, Technology Center 1600's Receptionist and Customer Service can be reached at (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frank Choi
Patent Examiner
Technology Center 1600
June 8, 2010

/Johann R. Richter/

Supervisory Patent Examiner, Art Unit 1616